

34. (New) Multilayer structure for packaging, according to claim 13, wherein the material of the gas barrier layers is polyamide (PA), PEN, EVOH, PAN or copolymers from acrylonitrile and butylene.

35. (New) Multilayer structure for packaging, according to claim 34, wherein the material of the gas barrier layers is polyamide (PA).

36. (New) Multilayer structure according to claim 21, wherein the paper layers have a surface weight of between about 30 g/m<sup>2</sup> and about 60 g/m<sup>2</sup>.

37. (New) Multilayer structure according to claim 36, wherein the paper layers have a surface weight of between about 40 g/m<sup>2</sup> and about 60 g/m<sup>2</sup>.

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**REMARKS**

Entry of the foregoing, reexamination and reconsideration of the subject application are respectfully requested in light of the amendments above and the comments which follow.

As correctly noted in the Office Action Summary, claims 1-21, 29 and 30 were pending. By the present response, claims 1, 2, 4, 5, 9, 10, 13, and 21 have been amended, claims 6-8 canceled, and new claims 32-36 added. Thus, upon entry of the present response, claims 1-5, 9-21, 29-30, and 32-36 remain pending and await further consideration on the merits.

Support for the present claim amendments can be found, for example, in at least the following portions of the disclosure: the original claims and the specification, page 7, lines 1-11.

***CLAIM REJECTIONS UNDER 35 U.S.C. §112***

Claims 1-21, 29 and 30 stand rejected under 35 U.S.C. §112, second paragraph on the grounds set forth in paragraph 3 of the Official Action.

By the present response, applicants have amended claims 1, 2, 4, 5, 10, 13, and 21 in a manner which addresses the above noted rejection. For example, claim 1 has been amended by replacing the term "of at most about" with "at least about". Further, the measurement of bending resistance/rigidity is now specified by the value of at least 100 mN. The specification at page 5 explains one manner of measuring this value using the Scandinavian Pulp Norm SCAN-P 29-35. With regards to the rejection of claim 5, the Examiner's attention is directed to the specification at page 7, where a preferred embodiment is described having a high amount of small cells. The closed cells in the expanded polymer layer provide a diffusion barrier for migrating gases, which is a further obstacle to permeation of gas molecules. The other claims have also been amended to provide proper antecedent basis (claims 2 and 10) and/or for removing narrow range limitations recited with broad range limitations (claims 4, 10, 13, and 21). Therefore, Applicants consider the identified claims as no longer indefinite and respectfully request reconsideration and withdrawal of the rejections.

***CLAIM REJECTIONS UNDER 35 U.S.C. §103***

Claims 1-14, 16, 29 and 30 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,500,303 to Anderson (hereafter "*Anderson*") on the grounds set forth in paragraph 5 of the Official Action. For at least the reasons noted below, this rejection should be withdrawn.

Exemplary embodiments of the present invention are directed to a multilayer structure. For example, Figure 2 shows a cross section of a multilayer structure including a central layer 21 of an expanded polymer layer and an outer layer 22 and 23 on each side of the expanded polymer material. The expanded polymer layer has a high amount of small cells which provide a more efficient obstacle toward the penetration of the gas molecules. See specification page 7, lines 2-4. In one embodiment, the foamed polymer layer has a first rigid component and a second ductile component. The rigid component forms the "skeleton" or interstices in the foamed layer structure, while the ductile (soft) polymer component forms the "skin" or cell walls between the skeleton or interstices. See the specification, page 7, line 28- page 8, line 2. Consequently, the composition provides closed cells in the foamed structure, which is preferably for optimal gas barrier properties. See specification, page 7, lines 5-11.

The foregoing features are broadly encompassed by Applicants' independent claim 1. This claim is directed to a multilayer structure. As recited in claim 1, the multilayer structure at least comprises an intermediate layer of an expanded polymer and on each side of said expanded polymer layer, a gas barrier layer. The material of the gas barrier layer has an oxygen gas permeability of less than about  $2000 \text{ cm}^3/\text{m}^2$  at  $23^\circ\text{C}$  and 0% RH, per

1 $\mu$ m thickness, during 24 h, at 1 atm. As recited in claim 1, the expandable polymer material comprises a first rigid component and a second ductile polymer component.

The disclosure in *Anderson* is quite different. The Examiner refers to column 4, lines 63-67 and column 5, line 1 for the alleged disclosure of a expandable polymer material comprising a first rigid component and a second ductile polymer component. However, the cited portions of the disclosure in *Anderson* are discussing the polymers of the plies (e.g., features 20 and 30 of Figure 11 of *Anderson*) and appear unrelated to the expandable polymer material of claim 1.

The disclosure in *Anderson* does discuss a foamed layer 110 in connection with Figure 11. See column 13, line 60 to column 14, line 36. However, the only material explicit disclosed for the foamed layer 110 is polystyrene. See column 14, line 25. Thus, the *Anderson* patent, at best, discloses a foamed layer formed of one polymer. Therefore, *Anderson* fails to disclose an expandable polymer material comprises a first rigid component and a second ductile polymer component as recited in claim 1. For at least this reason, the rejection of independent claim 1 should be withdrawn. Further, since the remaining claims rejected by *Anderson* depend from claim 1, the rejection of these dependent claims should also be withdrawn.

Claims 15, 17, 18, 20 and 21 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Anderson* in view of U.S. Patent No. 5,093,164 to Bauer et al. (hereafter "*Bauer et al.*") on the grounds set forth in paragraph 6 of the Official Action. For at least the reasons noted below, this rejection should be withdrawn.

The disclosure in *Bauer et al.* fails to overcome the above-noted deficiencies of the disclosure in *Anderson*. *Bauer et al.* discloses sheet materials having improved impact/shock tolerance. The disclosed multiple layer sheet material has an impact layer 12 positioned between a sealant substructure 14 and a substrate substructure 16. See column 4, lines 4-6. The impact layer is arranged as a single layer or is a multilayer. See column 4, lines 45-50. Thus, there is no disclosure in *Bauer et al.* to an intermediate layer of an expanded polymer comprising a first rigid component and a second ductile polymer component. Further, nothing in *Bauer et al.*, alone or in combination with *Anderson*, teaches or suggests a multilayer structure for packaging comprising an intermediate layer of an expandable polymer material comprising a first rigid component and a second ductile polymer component as recited in claim 1. Accordingly, Applicants respectfully request the withdrawal of this rejection.

Claim 19 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Anderson* in view of *Bauer et al.* and further in view of U.S. Patent No. 5,527,622 to Kato et al. (hereafter "*Kato et al.*") on the grounds set forth in paragraph 7 of the Official Action. For at least the reasons noted below, this rejection should be withdrawn.

The disclosure in *Kato et al.* fails to overcome the above-noted deficiencies of the disclosures in *Anderson* and *Bauer et al.* *Kato et al.* discloses packaging laminates comprising a paper substrate and a polyester resin layer. As shown in, for example, figure 1, the packaging has a substrate 1, a scent retention sealing layer 2 and gas barrier layer 3. Thus, there is no disclosure in *Kato et al.* to an intermediate layer of an expanded polymer with a gas barrier layer on each side. Further, nothing in *Kato et al.*, alone or in

combination with *Anderson* and *Bauer et al.*, teaches or suggests a multilayer structure for packaging comprising an expandable polymer material comprising a first rigid component and a second ductile polymer component as recited in claim 1. Accordingly, Applicants respectfully request the withdrawal of this rejection.

***NEW CLAIMS***

New claims 32-36 have been added. These claims contain narrower range limitations than the ranges in the claim from which they depend and were added to address the 35 U.S.C. § 112, second paragraph, concerns stated by the Examiner at paragraph 3 of the Official Action. It is submitted that these claims are distinguishable over the cited references for at least the same reasons as discussed above with respect to independent claim 1.

**CONCLUSION**

From the foregoing, further and favorable action in the form of a Notice of Allowance is earnestly solicited. Should the Examiner feel that any issues remain, it is requested that the undersigned be contacted so that any such issues may be adequately addressed and prosecution of the instant application expedited.

Respectfully submitted,

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**Attachment to Amendment dated December 16, 2002**

**Marked-up Claims 1, 2, 4, 5, 9, 10, 13, and 21**

1. (Twice Amended) Multilayer structure for packaging, having a bending resistance/rigidity of at least 100 mN [(as measured by SCAN-P 29-35)], at least comprising an intermediate layer of an expanded polymer and on each side of said expanded polymer layer, a gas barrier layer, the material of the gas barrier layer having an oxygen gas permeability of [at most] less than about 2000 cm<sup>3</sup>/m<sup>2</sup> at 23°C and 0% RH, per 1μm thickness, during 24 h, at 1 atm, wherein the expandable polymer material comprises a first rigid component and a second ductile polymer component.

2. (Twice Amended) Multilayer structure for packaging according to claim 1, [wherein the] comprising an outermost layers [comprise] including a heat sealable thermoplastic polymer.

4. (Twice Amended) Multilayer structure for packaging, according to claim 1, wherein the expanded polymer has at least about 500 cells/mm<sup>3</sup>[, preferably at least about 1000 cells/mm<sup>3</sup>].

5. (Twice Amended) Multilayer structure for packaging, according to claim 1, wherein said expanded polymer layer has cells, which are [substantially] closed without connection between the cellular cavities.

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**Marked-up Claims 1, 2, 4, 5, 9, 10, 13, and 21**

9. (Twice Amended) Multilayer structure for packaging, according to claim [8] 1, wherein the first rigid polymer component is selected from the group [essentially comprising] consisting of a high density polyethylene and high melt-strength polypropylene and that the second, ductile polymer component has been selected from the group [essentially comprising] consisting of a low density polyethylene and a general-purpose grade of polypropylene.

10. (Twice Amended) Multilayer structure for packaging, according to claim [8] 1, wherein [the] a mixing ratio of the first, rigid polymer component to the second, ductile polymer component in the expanded polymer layer is between 1:3 and 3:1[, preferably from about 1.25:1 to about 1.5:1].

13. (Twice Amended) Multilayer structure for packaging, according to claim 1, wherein said gas barrier layers, on each side of the expanded polymer layer, have a thickness and comprise a material such as to contribute to the total rigidity of the multilayer structure[, preferably polyamide (PA), PEN, EVOH, PAN or copolymers from acrylonitrile and butylene, most preferably PA].

**Attachment to Amendment dated December 16, 2002**

**Marked-up Claims 1, 2, 4, 5, 9, 10, 13, and 21**

21. (Twice Amended) Multilayer structure according to claim 15, wherein the paper layers have a surface weight of between about 20 g/m<sup>2</sup> and about 120 g/m<sup>2</sup>[, preferably of between about 30 g/m<sup>2</sup> and about 60 g/m<sup>2</sup>, most preferably of between about 40 g/m<sup>2</sup> and about 60 g/m<sup>2</sup>].